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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/704,848	11/02/2000	Mats Olsson	P12876US1	4869
27045	7590	03/09/2006	EXAMINER	
ERICSSON INC. 6300 LEGACY DRIVE M/S EVR C11 PLANO, TX 75024			WIMER, MICHAEL C	
			ART UNIT	PAPER NUMBER
			2828	

DATE MAILED: 03/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/704,848	Applicant(s) OLSSON ET AL.	
	Examiner Michael C. Wimer	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8/1/05 & 11/15/05.
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-37 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1,2 and 4-37 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This is in response to applicant's Request to Withdraw Office Action, filed 11/15/2005 pointing out that new Claims 35-37 had not been mentioned or considered in the previous, Final Office action rejection mailed 10/19/2005. The previous final rejection has been withdrawn and Claims 35-37 have now been considered as discussed below.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1,2,4,5,7,11,12,16/11,16/12,17-19,24,25,27-29,31,32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Casarez et al. (5913174) in view of Hayes et al. (5828342).

Regarding Claims 1,2,4,5,7,11,12,16/11,16/12,17-19,24,25,27-29,31,32 and 34, Casarez et al. show for example in Figures 1,4-6,11-14 and 31, an external antenna device 1 for a portable telecommunication apparatus comprising an antenna 63,65 arranged on at least one planar portion of a common support element 35 when the external antenna device is in an operational mode, the common support element comprising a flexible dielectric film 59 provided in a flexible housing 33 (col. 6, lines 43-59). Figure 12 shows the feed point in the gap 67 and ground point/portion 65 of the monopole antenna. Only a single antenna element arranged on the common support appears to be disclosed.

However, the level of ordinary skill in the antenna art is such that antennas may always be pluralized for the purpose of multi-band operation thus widening the bandwidth, and in another instance for providing gain. A skilled artisan would have looked to a multi-band antenna arrangement formed on a flexible substrate when multi-banding is a design objective.

Hayes et al. teach such an objective and show an antenna arrangement in the environment of a portable communication device, radio, etc., and a printed monopole operating in more than one frequency band and configured to permit spacing of radiating elements in a single plane (col. 1, lines 8-22 and 57-64).

Specifically, Hayes et al. show an antenna arrangement and teach in column 3, lines 31-39, of a first antenna 18 mounted on a first side 14 of a substrate 12 and a second antenna 20 on the second side 16 of the substrate 12.

Casarez et al. teach in column 9, second and third paragraphs, that the card radio and antenna arrangement is versatile by changing the antenna connected to the card radio in a variety of applications.

Thus, Hayes et al. are cited as resolving the level of ordinary skill in the antenna art, and employ and teach in col.2, lines 26-49, two antenna elements operating on different frequency bands (col. 4, lines 5-25) and formed on a common, flexible support element 12 and on opposite sides thereof (col. 4, lines 50-53).

Further regarding Claim 34, the specific frequency bands of operation are always obvious to the skilled artisan because antennas are frequency-scaled to operate on the FCC-assigned bands in a particular radio/antenna design. Further

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regarding Claims 17 and 18, the references suggest the bands of operation and services and thus are obvious to the skilled artisan.

Hayes et al. also teach the use of over-molding (col. 4, lines 53-60) which is equivalent to applicant's "flexible housing."

Further regarding Claim 12, the PCMCIA radio card in Casarez et al. contains a p.c. board with radio circuitry and connector.

3. Claims 6,8-10,30 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Casarez et al. (5913174) in view of Hayes et al. (5828342) as applied to claims 1,4,5,6 and 25 above, and further in view of Korisch (5926139).

Regarding Claims 6,8-10,30 and 33, the antennas of the primary reference devices neither provide an antenna element as a PIFA nor a single antenna element used for two frequency bands. Thus, Korisch is cited as evidence of obviousness and as resolving the level of ordinary skill in the antenna art, and shows a PIFA radiating element comprised of two radiating portions 30 and 32, resonating on high and low frequency bands respectively (e.g., 1850-1990 MHz. and 824-896 MHz). It would have been obvious to the skilled artisan to employ the planar, dual band PIFA of Korisch in the primary reference devices, particularly in an external antenna device mounted on a flexible board and dielectric housing.

4. Claims 13,15,16/15,20,22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Casarez et al. (5913174) in view of Hayes et al. (5828342) as applied to claims 11 and 12 above, and further in view of Pankinaho (6140966).

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The use of resilient contact pins is not taught in the primary reference devices.

Thus, Pankinaho is cited as resolving the level of ordinary skill in the antenna art and as evidence of obviousness and shows, for example in Figures 7 and 8, a planar antenna and circuit board, interrelated much like applicant's arrangement, and employing three resilient contact pins or spring ledges 110', 120' and 130', connected to the feed and ground points, as claimed, in order to effect electrical connection of the antenna 100 and printed circuit board 160. It would have been obvious to the skilled artisan to provide such pins to connect the primary reference device antennas to the circuit board of the portable radio.

5. Claims 14, 16/14 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Casarez et al. (5913174) in view of Hayes et al. (5828342) and Pankinaho (6140966) as applied to claims 11-13 and 20 above, and further in view of Sciarretta et al. (6039580).

The specific resilient, electrical contacts, such as the pogo pins claimed here, do not appear to be taught in the reference devices. However, Sciarretta et al. are cited as evidence of obviousness and as resolving the level of ordinary skill in the antenna art and teaches pogo pins used for RF module connections of the antennas in a phased array. The pogo pins 256 are used to interconnect the RF connectors 248 and RF modules 246. It would have been obvious to employ such axially-resilient connectors in lieu of the spring-contact pins/ledges in Pankinaho in order to provide a more positive and efficient RF contact.

6. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Casarez et al. (5913174) in view of Hayes et al. (5828342) as applied to claim 25 above, and further in view of Dietrich et al. (5552798).

No common support element with planar portions arranged at an angle with respect to each other appears to be taught in the primary reference devices. Thus, Dietrich et al. are cited as evidence of obviousness and as resolving the level of ordinary level of skill in the antenna art, and shows, for example in Fig. 7 a common support structure with portions 72 and 74 angled with respect to each other in order to receive the proper and efficient signal from satellites. A skilled artisan would recognize such an arrangement of planar antennas 76 on respective portions of the common support, 72,74 as obvious to apply in the reference devices for the reason of receiving multipath signals.

7. Claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Casarez et al. (5913174) in view of Hayes et al. (5828342), as applied to claims 1,11 and 25 above, and further in view of Olyphant et al. (3832769).

Regarding Claims 35-37, the recitation of the flexible dielectric film being in the range of 70 to 400 micrometers is merely an obvious consideration in the specific design. The substrate thickness range is based upon the state of the art and the ordinary level of skill in the printed circuit art. For example, it is well known to form and etch printed circuits on a flexible dielectric substrate mounted to a rigid member as evidenced by Casarez et al. The flexible substrate 59 in Casarez et al. is characterized and described as copper clad polyimide. The choice of film

thickness in order to provide a flexible substrate is dependent upon the environment and particular design. Thus, the patent to Olyphant et al is cited as evidence of obviousness and as resolving the level of ordinary skill in the art, and shows in Fig. 2, a printed circuit 14 on a surface of the thin dielectric substrate 12. Olyphant et al. teach in column 2, lines 57-64, and characterize the dielectric substrate as having a typical thickness of 2.5-250 microns, and the substrate is preferred to be a thin, flexible film of polyimide. In view of this suggestion, it would have been obvious to the skilled artisan to employ the thin film substrate material as the printed circuit substrate in Casarez et al. for the purpose of providing a flexible substrate of polyimide.

Response to Arguments

8. Applicant's arguments filed 8/1/2005 have been fully considered but they are not persuasive. Specifically, the change in terms from "contained" to "provided" in independent Claims 1,11 and 25, actually describes the arrangement shown in Casarez et al. The flexible dielectric film of copper clad polyimide defining a flexible substrate 59, where the antenna itself is defined as flexible conductor 63,65 (as set forth by Casarez et al. at col. 6, lines 46-59). Applicant acknowledges such a construction in the sentence bridging pages 6 and 7 of the remarks. The basic structure is therefore taught. Flexible conductors are laminated to a strong flexible construction (59). These claims recite a flexible film (59) provided in a flexible outer housing (33) (see col. 5, lines 10-12). The claim language is fully met by this structure. The obviousness rejection makes it clear that pluralizing antenna elements is a very basic concept in antenna

design and well within the ordinary level of skill of an antenna artisan involved in design and production. Therefore, the rejections stand.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Wimer whose telephone number is (571) 272-1833. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun O. Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Michael C. Wimer", is positioned above the printed name.

Michael C. Wimer
Primary Examiner
Art Unit 2828

MCW
2/22/2006